THE INVENTION CLAIMED IS:

1. An image forming and image scanning apparatus, comprising:

an optical scanner that produces a first data signal from a hard-copy image; a memory circuit for storage of data; a communications port; a print engine that produces a physical output upon a print media; and at least one processing circuit that is configured to control a flow of data: (a) between said memory circuit and said communications port, (b) between said optical scanner and said memory circuit, and (c) between said print engine and said memory circuit;

said at least one processing circuit also being configured: (d) to convert said first data signal produced by said optical scanner into a second data signal, at least a portion of which comprises audio information, then (e) to transfer said second data signal to said communications port; and

said at least one processing circuit further being configured: (f) to receive a third data signal from said communications port, at least a portion of third data signal comprising audio information, (g) to convert said third data signal into a fourth data signal comprising a print job, then (h) to transfer said fourth data signal to said print engine for recording as a hard-copy printout upon a print media, wherein said fourth data signal contains audio information for at least a portion of said hard-copy printout.

2. The image forming apparatus as recited in claim 1, further comprising an external computer that is in communication with said communications port, wherein said external computer includes: (a) a microphone that receives sound waves; (b) an input interface circuit that converts the sound waves received by said microphone into at least a portion of said third data signal, which is transmitted to said communications port and is received by said at least one processing circuit; (c) an audio speaker that outputs sounds waves; and (d) an output interface circuit that receives said second data signal from said communications port and converts at least a portion of the second data signal into a fifth signal that drives said audio speaker.

3. The image forming apparatus as recited in claim 2, wherein said input interface circuit comprises: (a) an analog-to-digital converter (ADC) that converts an output signal produced by said microphone into a sixth digital signal, and (b) a signal

processing circuit that compresses said sixth digital signal into at least a portion of said third signal which is smaller in data size than said sixth digital signal.

4. The image forming apparatus as recited in claim 3, further comprising an audio amplifier that receives said output signal produced by said microphone, and signal-conditions said output signal into an electrical analog signal that better matches an input voltage characteristic of said ADC.

5. The image forming apparatus as recited in claim 3, wherein at least a portion of the compressed third signal generated by said signal processing circuit comprises one of: (a) a lossless compressed data signal; (b) a lossy compressed data signal; (c) a WAV file, and (d) an MP3 file.

6. The image forming apparatus as recited in claim 2, wherein said output interface circuit comprises: (a) a signal processing circuit that uncompresses said second data signal into a seventh digital signal, said seventh digital signal being larger in data size than at least a portion of said second signal which contains said audio information, and (b) a digital-to-analog converter (DAC) that converts at least a portion of said seventh digital signal into an eighth analog signal that drives said audio speaker.

7. The image forming apparatus as recited in claim 6, further comprising an audio amplifier that receives said eighth analog signal produced by said DAC, and signal-conditions said eighth analog signal into an electrical signal that better matches an input impedance characteristic of said audio speaker.

8. The image forming apparatus as recited in claim 6, wherein at least a portion of the second signal directed to said signal processing circuit comprises one of: (a) a lossless compressed data signal; (b) a lossy compressed data signal; (c) a WAV file, and (d) an MP3 file.

9. The image forming apparatus as recited in claim 2, wherein said hard-copy printout is placed upon a standard letter-sized 8-1/2 inch by 11 inch sheet of print media.

10. The image forming apparatus as recited in claim 1, wherein said hard-copy printout also includes printed image data for a portion of said hard-copy printout in addition to said printed audio information portion, both on a same surface of said print media.

11. The image forming apparatus as recited in claim 10, wherein said audio information portion is printed proximal to said image data portion, and wherein said audio information portion is printed in a manner such that one of: (a) a gray level and (b) a color, is at least somewhat unobtrusive when viewed by a human eye.

12. The image forming apparatus as recited in claim 1, wherein said at least one processing circuit is further configured to convert at least a portion of said first data signal produced by said optical scanner into image data and, when generating said second data signal, to automatically determine a boundary of said portion of said first data signal that represents audio information.

13. The image forming apparatus as recited in claim 1, wherein said at least one processing circuit is further configured: (j) to receive additional audio information from one of: (i) said optical scanner and (ii) said communications port; and (k) to automatically append said additional audio information to said fourth data signal, such that said additional audio information is included on said hard-copy printout.

14. The image forming apparatus as recited in claim 13, wherein one of: (a) said additional audio information is appended onto a same sheet of print media of said hard-copy printout; and (b) said additional audio information is appended onto at least one additional sheet of print media of said hard-copy printout.

15. An image forming and image scanning apparatus, comprising:

an optical scanner; a memory circuit for storage of data; a print engine; a microphone; an input interface circuit; an output interface circuit; an audio speaker that outputs sounds waves; and at least one processing circuit that is configured to control a flow of data: (a) between said optical scanner and said memory circuit, (b) to said output

interface circuit, (c) from said input interface circuit, and (d) between said print engine and said memory circuit; wherein:

said optical scanner produces a first data signal from a hard-copy image;

said at least one processing circuit is also configured: (e) to convert said first data signal produced by said optical scanner into said a second data signal, at least a portion of which comprises audio information, then (f) to transfer said second data signal to said output interface circuit;

said output interface circuit converts at least a portion of the second data signal into a fifth signal that drives said audio speaker;

said microphone generates an audio-frequency signal from received sound waves;

said input interface circuit converts said audio-frequency signal generated by said microphone into at least a portion of a third data signal;

said at least one processing circuit is further configured: (g) to receive said third data signal from said input interface circuit, at least a portion of third data signal having audio information, (h) to convert said third data signal into a fourth data signal comprising a print job, then (i) to transfer said fourth data signal to said print engine for recording as a hard-copy printout upon a print media, wherein said fourth data signal contains audio information for at least a portion of said hard-copy printout.

16. The image forming and image scanning apparatus as recited in claim 15, wherein said input interface circuit comprises: (a) an analog-to-digital converter (ADC) that converts said audio-frequency signal generated by said microphone into a sixth digital signal, and (b) a signal processing circuit that compresses said sixth digital signal into at least a portion of said third signal which is smaller in data size than said sixth digital signal.

17. The image forming and image scanning apparatus as recited in claim 16, further comprising an audio amplifier that receives said audio-frequency signal generated by said microphone, and signal-conditions said audio-frequency signal into an electrical analog signal that better matches an input voltage characteristic of said ADC.

18. The image forming and image scanning apparatus as recited in claim 16, wherein at least a portion of the compressed third signal generated by said signal processing circuit comprises one of: (a) a lossless compressed data signal; (b) a lossy compressed data signal; (c) a WAV file, and (d) an MP3 file.

19. The image forming and image scanning apparatus as recited in claim 15, wherein said output interface circuit comprises: (a) a signal processing circuit that uncompresses said second data signal into a seventh digital signal, said seventh digital signal being larger in data size than at least a portion of said second signal which contains said audio information, and (b) a digital-to-analog converter (DAC) that converts at least a portion of said seventh digital signal into an eighth analog signal that drives said audio speaker.

20. The image forming and image scanning apparatus as recited in claim 19, further comprising an audio amplifier that receives said eighth analog signal produced by said DAC, and signal-conditions said eighth analog signal into an electrical signal that better matches an input impedance characteristic of said audio speaker.

21. The image forming and image scanning apparatus as recited in claim 19, wherein at least a portion of the second signal directed to said signal processing circuit comprises one of: (a) a lossless compressed data signal; (b) a lossy compressed data signal; (c) a WAV file, and (d) an MP3 file.

22. The image forming and image scanning apparatus as recited in claim 15, wherein said hard-copy printout is placed upon a standard letter-sized 8-1/2 inch by 11 inch sheet of print media.

23. The image forming and image scanning apparatus as recited in claim 15, wherein said hard-copy printout also includes printed image data for a portion of said hard-copy printout in addition to said printed audio information portion, both on a same surface of said print media.

24. The image forming and image scanning apparatus as recited in claim 23, wherein said audio information portion is printed proximal to said image data portion, and wherein said audio information portion is printed in a manner such that one of: (a) a gray level and (b) a color, is at least somewhat unobtrusive when viewed by a human eye.

25. The image forming and image scanning apparatus as recited in claim 15, wherein said at least one processing circuit is further configured to convert at least a portion of said first data signal produced by said optical scanner into image data and, when generating said second data signal, to automatically determine a boundary of said portion of said first data signal that represents audio information.

26. The image forming apparatus as recited in claim 15, wherein said at least one processing circuit is further configured: (j) to receive additional audio information from one of: (i) said optical scanner and (ii) said microphone; and (k) to automatically append said additional audio information to said fourth data signal, such that said additional audio information is included on said hard-copy printout.

27. The image forming apparatus as recited in claim 26, wherein one of: (a) said additional audio information is appended onto a same sheet of print media of said hard-copy printout; and (b) said additional audio information is appended onto at least one additional sheet of print media of said hard-copy printout.

28. A method for recording sound waves and for playing back sound waves, utilizing an image forming and scanning apparatus, said method comprising:

receiving first sound waves at a microphone, and converting said first sound waves to a first audio information signal;

interfacing said first audio information signal to an image forming and scanning apparatus, and recording as at least a portion of a hard-copy printout said first audio information signal in a predetermined format utilizing a printer portion of said image forming and scanning apparatus, wherein the first audio information signal portion of said hard-copy printout is representative of said first sound waves;

based upon a hard-copy image, receiving image information from an optical scanner portion of said image forming and scanning apparatus, wherein at least a portion of said image information comprises audio data, and converting the audio data portion of said image information into a second audio information signal; and

interfacing said second audio information signal to an audio speaker, and outputting second sound waves, wherein said second sound waves are representative of the audio data portion of said image information received by said optical scanner portion.

29. The method as recited in claim 28, wherein:

said microphone, said audio speaker, said printer portion of the image forming and scanning apparatus, and said optical scanner portion of the image forming and scanning apparatus are all installed within a single standalone all-in-one printer.

30. The method as recited in claim 28, wherein: (a) said printer portion of the image forming and scanning apparatus, and said optical scanner portion of the image forming and scanning apparatus, are both installed within a single all-in-one printer; and (b) said microphone and said audio speaker both are installed in a separate computer apparatus; and

further comprising the steps of:

communicating said first audio information signal from said microphone to a first communications port of said separate computer apparatus, and then to a second communications port of said all-in-one printer, where the first audio information signal is recorded; and

communicating said second audio information signal from said optical scanner portion to said second communications port, and then to said first communications port, where the second audio information signal is played back by said audio speaker.

31. The method as recited in claim 28, further comprising the step of: compressing a data size of at least one of said first audio information signal and said second audio information signal by use of a signal processing circuit, for later storage in a memory circuit.

32. The method as recited in claim 31, wherein the step of data compressing at least one of said first audio information signal and said second audio information signal produces one of: (a) a lossless compressed data signal; (b) a lossy compressed data signal; (c) a WAV file, and (d) an MP3 file.

33. The method as recited in claim 28, wherein said hard-copy printout is placed upon a standard letter-sized 8-1/2 inch by 11 inch sheet of print media.

34. The method as recited in claim 28, wherein said hard-copy printout also includes printed image data for a portion of said hard-copy printout in addition to said printed first audio information portion, both on a same surface of said print media.

35. The method as recited in claim 34, wherein said first audio information portion is printed proximal to said image data portion, and wherein said first audio information portion is printed in a manner such that one of: (a) a gray level and (b) a color, is at least somewhat unobtrusive when viewed by a human eye.

36. The method as recited in claim 28, wherein said hard-copy printout contains the same information as said hard-copy image.

37. The method as recited in claim 28, wherein said hard-copy printout contains additional information that is appended onto said hard-copy printout, and wherein said additional information is representative of a third audio information signal which contains audio information over and above that contained in said first audio information signal.

38. The image forming apparatus as recited in claim 37, wherein one of: (a) said additional information is appended onto a same sheet of print media of said hard-copy printout; and (b) said additional information is appended onto at least one additional sheet of print media of said hard-copy printout.

39. A sound recording and image forming system, comprising:

a memory circuit for storage of data; a print engine; a microphone; an interface circuit; and at least one processing circuit that is configured to control a flow of data: (a) from said interface circuit, and (b) between said print engine and said memory circuit; wherein:

said microphone generates an audio-frequency signal from received sound waves;

said interface circuit receives and converts said audio-frequency signal generated by said microphone into a first data signal, wherein at least a portion of said first data signal comprises information representative of said received sound waves; and

said at least one processing circuit is further configured: (c) to receive said first data signal from said interface circuit, (d) to convert said first data signal into a second data signal comprising a print job, and (e) to transfer said second data signal to said print engine for recording as a hard-copy printout upon a print media, in which at least a portion of said hard-copy printout is representative of said received sound waves.

40. The system as recited in claim 39, wherein said microphone and said interface circuit are one of: (a) resident on a computer device that is physically separate from said print engine; and (b) resident on an image forming apparatus which also incorporates said print engine.

41. The system as recited in claim 39, wherein said system provides an automatic record mode that records said received sound waves and automatically creates said hard-copy printout, said mode commencing upon a first manual action performed by a user and terminating upon one of the following events:

(a) after a first predetermined period of time, as selectable in advance by said user;

(b) after a second predetermined period of time, as automatically determined by an amount of physical space that remains available upon a sheet of print media;

(c) upon a second manual action by said user; and

(d) upon a lack of received sound waves of a predetermined minimum audio level for a third predetermined time period.

42. The system as recited in claim 41, wherein said second predetermined period of time is graphically displayed in a graphic preview mode of operation.

43. The system as recited in claim 39, wherein said system stores one of said first data signal and said second data signal as a file in one of: (a) said memory circuit; (b) a first bulk memory device that is resident on an image forming apparatus that also contains said print engine; and (c) a second bulk memory device that is resident on an external computer.

44. The system as recited in claim 43, wherein said file comprises one of: (a) uncompressed data; (b) lossless compressed data; (c) lossy compressed data; (c) a WAV file, and (d) an MP3 file.

45. The system as recited in claim 39, further comprising: an optical scanner that generates a third data signal from scanning a sheet of hard-copy media, wherein:

at least a portion of image information on said hard-copy media comprises audio information;

at least a portion of said third data signal is representative of said audio information; and

said at least one processing circuit is further configured for one of: (f) to convert said third data signal into a fourth data signal comprising a print job, and to transfer said fourth data signal to said print engine for recording as a hard-copy printout upon a print media, in which at least a portion of said hard-copy printout is representative of said audio information; and (g) to store one of said third data signal and said fourth data signal as a file in a bulk memory device, wherein said file comprises one of: (i) uncompressed data; (ii) lossless compressed data; (iii) lossy compressed data; (iv) a WAV file, and (v) an MP3 file.

46. The system as recited in claim 39, wherein said at least one processing circuit is further configured: (f) to receive an additional audio-frequency signal from said microphone; (g) to convert said additional audio-frequency signal and to automatically append said additional audio-frequency signal as a further portion of said

second data signal; and (h) to record said further portion of said second data signal as part of said hard-copy printout.

47. The system as recited in claim 46, wherein a maximum amount of remaining recording time is graphically displayed in a graphic preview mode of operation, based upon an amount of physical space that remains available upon said hard-copy printout.

48. An image scanning and sound playback system, comprising:

an optical scanner; a memory circuit for storage of data; an interface circuit; an audio speaker that outputs sounds waves; and at least one processing circuit that is configured to control a flow of data: (a) between said optical scanner and said memory circuit, and (b) to said interface circuit; wherein:

said optical scanner produces a first data signal from a hard-copy image;

said at least one processing circuit is also configured: (c) to convert said first data signal produced by said optical scanner into said a second data signal, at least a portion of which comprises audio information from said hard-copy image, and (d) to transfer said second data signal to said interface circuit; and

said interface circuit converts at least a portion of the second data signal into a third signal that drives said audio speaker to play back said audio information.

49. The system as recited in claim 48, wherein said audio speaker and said interface circuit are one of: (a) resident on a computer device that is physically separate from said optical scanner; and (b) resident on an image generating apparatus which also incorporates said optical scanner.

50. The system as recited in claim 48, wherein said system provides an automatic playback mode that scans said hard-copy image and automatically plays said audio information, said mode commencing upon a first manual action performed by a user and terminating upon one of the following events:

(a) after a first predetermined period of time, as selectable in advance by said user;

(b) after a second predetermined period of time, as automatically determined by an amount of said audio information that is contained in said first data signal; and

(c) upon a second manual action by said user.

51. The system as recited in claim 50, wherein said second predetermined period of time is graphically displayed in a graphic preview mode of operation.

52. The system as recited in claim 48, wherein said system stores one of said first data signal and said second data signal as a file in one of: (a) said memory circuit; (b) a first bulk memory device that is resident on an image generating apparatus that also contains said optical scanner; and (c) a second bulk memory device that is resident on an external computer.

53. The system as recited in claim 52, wherein said file comprises one of: (a) uncompressed data; (b) lossless compressed data; (c) lossy compressed data; (c) a WAV file, and (d) an MP3 file.

54. The system as recited in claim 48, further comprising: a print engine that forms a hard-copy printout, wherein:

said at least one processing circuit is further configured: (e) to convert one of said first data signal and said second data signal into a third data signal comprising a print job, and to transfer said third data signal to said print engine for recording as a hard-copy printout upon a print media, in which at least a portion of said hard-copy printout is representative of said audio information.

55. The system as recited in claim 54, wherein:

said at least one processing circuit is further configured: (f) to store said third data signal as a file in a bulk memory device, wherein said file comprises one of: (i) uncompressed data; (ii) lossless compressed data; (iii) lossy compressed data; (iv) a WAV file, and (v) an MP3 file.

56. The system as recited in claim 48, further comprising:

a print engine that forms a hard-copy printout; and an external computer; wherein:

said at least one processing circuit is further configured: (e) to receive a sound file containing audio data from an external computer over a communications port; and (f) to convert said sound file into a print job, and to transfer said print job to said print engine for recording as a hard-copy printout upon a print media, in which at least a portion of said hard-copy printout is representative of said audio data.

57. The system as recited in claim 48, wherein said at least one processing circuit is further configured: (g) to receive a second sound file containing additional audio data from said external computer; (h) to automatically append said additional audio data as a further portion of said print job; and (i) to transfer the further portion of said print job to said print engine for recording as part of said hard-copy printout.

58. An image sensing and image forming apparatus, comprising:

an optical sensor; a memory circuit for storage of data; a print engine having a printhead carrier; and at least one processing circuit that is configured to control a flow of data: (a) between said optical sensor and said memory circuit, and (b) between said print engine and said memory circuit; wherein:

said optical sensor is mounted on said printhead carrier, said optical sensor producing a first data signal from a hard-copy image, at least a portion of which comprises audio information; and

said at least one processing circuit is also configured: (c) to convert said first data signal into a second data signal comprising a print job, and (d) to transfer said second data signal to said print engine for recording as a hard-copy printout upon a print media, wherein at least a portion of said hard-copy printout is representative of said audio information.

59. The apparatus as recited in claim 58, wherein said hard-copy printout is entirely comprised of audio data, even though said first data signal produced from said hard-copy image is not entirely comprised of audio data.

60. The apparatus as recited in claim 59, wherein one of said first signal and said second signal is stored as a sound file in a bulk memory device that is resident on one of: (i) said image sensing and image forming apparatus; and (ii) a separate host

computer that is in communication with said image sensing and image forming apparatus over a communications channel.

61. The apparatus as recited in claim 60, wherein said sound file comprises one of: (i) uncompressed data; (ii) lossless compressed data; (iii) lossy compressed data; (iv) a WAV file, and (v) an MP3 file.

62. The apparatus as recited in claim 58, wherein said audio information contained in said hard-copy image is in a form that is not visible to a human eye, yet is in a form readable by said optical sensor.

63. The apparatus as recited in claim 58, further comprising: an audio speaker that outputs sounds waves; and an output interface circuit that drives said audio speaker;

wherein said at least one processing circuit is further configured: (e) to convert said first data signal into a third data signal having an audio-frequency format, based upon the audio information contained in said first data signal, (f) to transfer said third data signal to said output interface circuit; and (g) to play back said third data signal through said audio speaker.

64. The apparatus as recited in claim 63, wherein said audio speaker is resident on one of: (i) said image sensing and image forming apparatus; and (ii) a separate host computer that is in communication with said image sensing and image forming apparatus over a communications channel.

65. The apparatus as recited in claim 63, wherein said at least one processing circuit is yet further configured to: (h) append additional audio information to said third data signal, and (i) to play back the appended third data signal through said audio speaker.

66. The apparatus as recited in claim 65, further comprising: a microphone that generates an input audio-frequency signal from received sound waves; and an input interface circuit that receives and converts said input audio-frequency signal generated

by said microphone into a fourth data signal, wherein at least a portion of said fourth data signal comprises information representative of said received sound waves;

wherein said at least one processing circuit is yet further configured: (j) to control a flow of data between said input interface circuit and said memory circuit; and

wherein said additional audio information being appended is derived from said fourth data signal.

67. The apparatus as recited in claim 66, wherein said microphone is resident on one of: (i) said image sensing and image forming apparatus; and (ii) a separate host computer that is in communication with said image sensing and image forming apparatus over a communications channel.

68. The apparatus as recited in claim 58, wherein said optical sensor comprises an automatic alignment sensor mounted on a printhead carrier of an ink jet printer.

69. The apparatus as recited in claim 68, wherein said automatic alignment sensor detects markings of said hard-copy image that are infrared-readable.